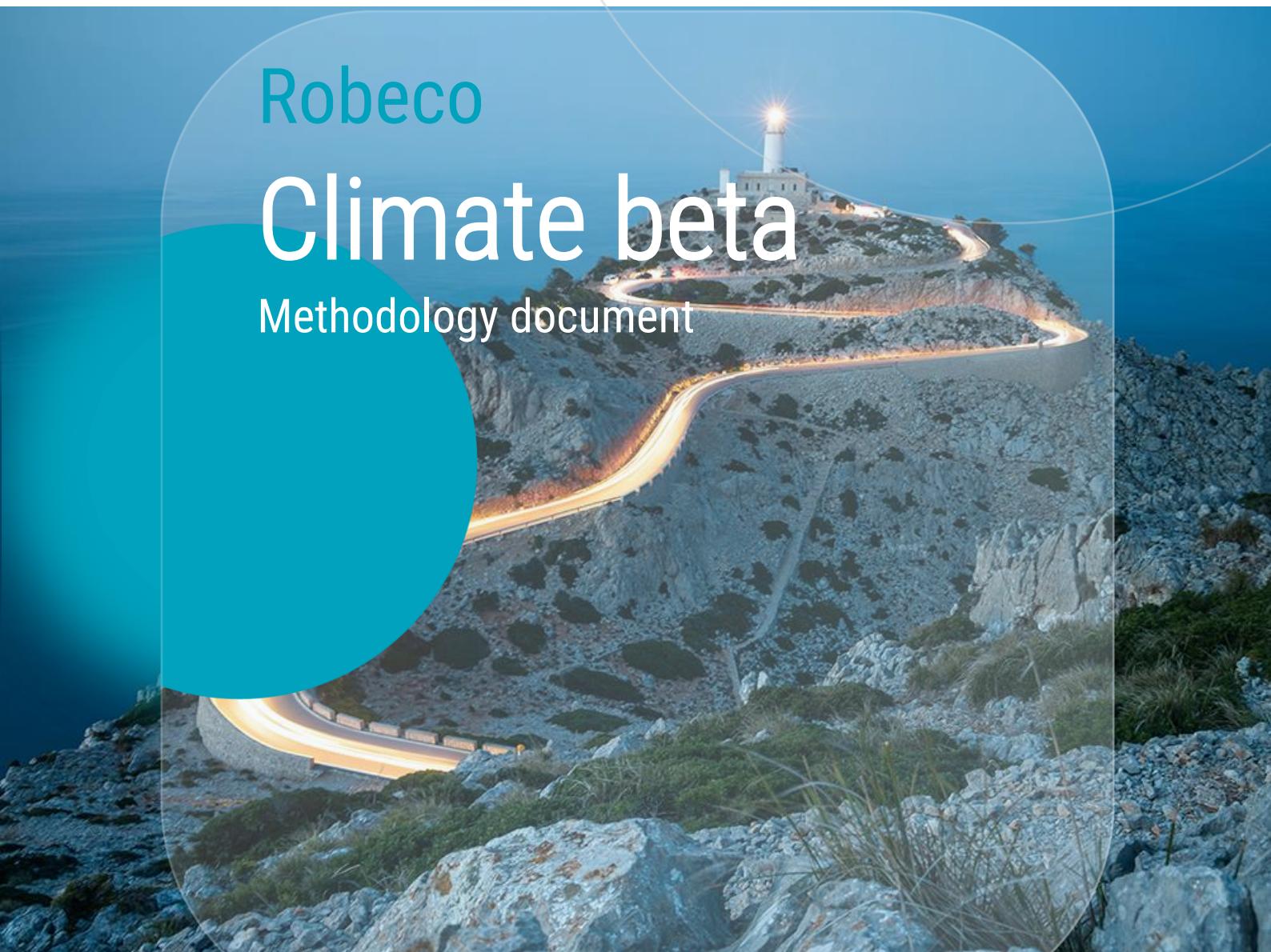


Robeco  
**Climate beta**  
Methodology document



# Contents

Climate Beta, a novel way to measure a stock's sensitivity to climate risks	3
The Climate Risk Factor	4
Regression approach	5
Climate Beta in practice	6
Climate Beta in the Academic Literature	7
Climate Beta in Robeco Indices	7
Conclusion	8

## METHODOLOGY DOCUMENT – DECEMBER 2024

Investment research for professional investors

### Robeco Indices Team

From left to right: Jean-Paul van Brakel, CFA Quantitative Researcher, Xerxes Chong Quantitative Researcher, Simon Lansdorp, PhD Portfolio Manager, Georgi Kyosev, PhD Portfolio Manager, Frank Wirds, CFA Client Portfolio Manager, Ioannis Antoniou Quantitative Researcher, Dries Laurs Quantitative Researcher, Lara Spaans Quantitative Researcher, Joop Huij, PhD Head Indices



# Climate beta: Novel measure of stock sensitivity to climate transition risk

Robeco's climate beta is a forward-looking measure that captures climate transition risk above and beyond traditional carbon emissions data. Climate beta is based on the correlation of a stock with the climate risk factor and reflects the anticipated positive or negative reaction of the stock price to climate events. Because climate beta is based on publicly available information, it provides a novel, objective perspective on climate transition risk.

While climate transition risk has become a critical concern for most investors, addressing it presents inherent challenges, many of which are data related. Carbon emissions data, although valuable, is not specifically designed to measure climate transition risk. Even though the quality of Scope 1 and Scope 2 emissions data is relatively good and still improving, it has notable limitations. For instance, the data is often backward-looking with potential lags that can exceed two years, which means it does not capture any recent actions companies have taken to reduce emissions.

Moreover, while carbon emissions data typically provides a good indication of companies likely to be negatively affected by a sudden shift to a low-carbon economy, it is less effective at identifying potential 'winners' in such a transition. Another significant drawback is that not all companies report their carbon emissions data. To address this gap, data providers use proprietary models to estimate emissions for non-reporting companies. However, these estimates can vary significantly between providers, raising questions about their reliability.<sup>1</sup>

Climate beta is based on the concept that the market is relatively efficient in pricing transition risk in the near- and medium-term. It relies on the climate risk factor, which measures the return differential between stocks with high climate risk exposure and those with low climate risk exposure. By incorporating current events and market expectations, climate beta is a more timely and forward-looking measure compared to, for example, emissions data. Additionally, the methodology is applicable to a wide range of securities, as market data is available for virtually all listed companies. Such data is highly transparent, because it is not dependent on voluntary disclosures.

Most importantly, climate beta is able to identify companies vulnerable to the low-carbon transition (climate laggards) and those expected to benefit from it (climate leaders). This is crucial information that generic emissions data does not provide.

Estimating climate betas relies on a two-step procedure:

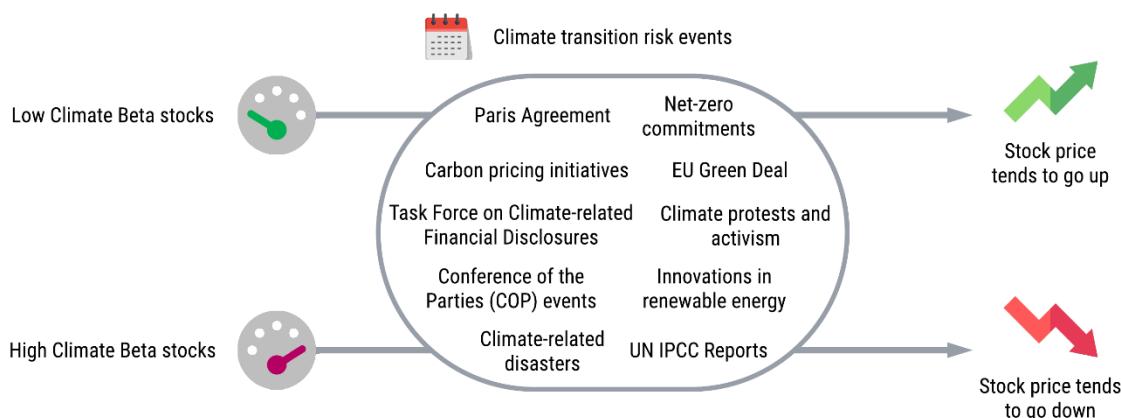
- In **step 1**, we calculate the return of the climate risk factor that captures the return differential between companies with high climate risk exposure and companies with low climate risk exposure.
- In **step 2**, we perform a weighted least squares regression to estimate a stock's return sensitivity to changes in the climate risk factor.

This results in a single number that indicates whether a stock tends to outperform (negative climate beta) or underperform (positive climate beta) when there is a positive shock to the climate risk factor. When the climate beta of a stock is zero, the price of the stock tends to be unresponsive to changes in the climate risk factor and insensitive to climate transition risk. Examples of climate-related events in which climate uncertainty is high are the US presidential elections, Conference of the Parties (COP) events, and natural disasters such as bush fires in Australia.

<sup>1</sup> See for example Busch, Johnson, and Pioch (2020) ["Corporate Carbon Performance Data: Quo Vadis?"](#)

Figure 1 illustrates this concept. There are two stocks, a climate leader with a low and negative climate beta (highlighted in green) and a climate laggard with a high and positive climate beta (highlighted in magenta). Note that a high climate beta indicates a tendency to co-move positively with the climate risk factor, which depreciates in times of rising climate concerns. In response to a climate risk event (e.g. introduction of a global carbon price, a cap on emissions, introduction of a low-cost renewable energy source, etc.), the low climate beta stock tends to appreciate in value, while the high climate beta stock tends to depreciate in value. This relationship holds for both positive shocks to climate risk as well as for negative shocks.

**Figure 1** – Conceptual illustration of climate beta



Source: Robeco

### The climate risk factor

In step 1 we calculate the climate risk factor. The climate risk factor captures return differences between stocks with high climate risk exposure and stocks with low climate risk exposure. Robeco calculates two long-short Climate Risk Factor Indices on a daily basis: the **Robeco Developed Climate Risk LS Factor Index USD Total Return Index** and the **Robeco Emerging Climate Risk LS Factor Index USD Total Return Index**. The returns of these indices represent the return differential between a long basket of stocks with poor climate SDG scores and a short basket of stocks with good climate SDG scores.<sup>2</sup>

*“The Robeco Climate Risk Long-Short Factor Indices track the return differentials between a long basket of stocks with poor climate SDG scores and a short basket of stocks with good climate SDG scores*

The Robeco Climate Risk Factors are available for reference and can be downloaded via the website of S&P Global<sup>3</sup> and via other data providers such as FactSet.

<sup>2</sup> The Robeco SDG-alignment scores measure a company's contributions to the 17 Sustainable Development Goals (SDGs). The scores range from -3 (strongly misaligned) to +3 (strongly aligned). Companies with a zero score have neutral impacts on the SDGs. Climate-related SDGs are SDG 7 (Renewable and Affordable Energy) and SDG 13 (Climate Action). Robeco's SDG-alignment scores are available for download via the Sustainable Investing Open Access project: <https://www.robeco.com/en-int/sustainable-investing/sustainable-investing-open-access-initiative>

<sup>3</sup> See [Robeco Developed Climate Risk LS Factor Index USD Total Return | S&P Dow Jones Indices](#) for developed markets and [Robeco Emerging Markets Climate Risk LS Factor Index USD Total Return | S&P Dow Jones Indices](#) for emerging markets.

Figure 2 presents a screenshot of the Robeco Developed Climate Risk LS Factor Index as viewed from S&P Global's web portal. Looking at the long-term performance of the Developed Climate Risk Factor, we can roughly identify three different "regimes". In the years from 2006 to 2012, the Climate Risk Factor gained in value, which implies that stocks with poor climate SDG scores outperformed stocks with good climate SDG scores. This period coincides with increased oil and commodities prices. From 2012 to mid-2020, a long downward trend occurred, indicating that over this period, stocks with good climate SDG scores outperformed their poor climate SDG counterparts. This period coincides with tightening climate policies and a general shift towards sustainable investing. Lastly, starting from 2020, we see low-climate-SDG firms outperforming.

**Figure 2** – The Robeco Developed Climate Risk Factor



Source: S&P Global and Robeco Sustainable Index Solutions. The Robeco Climate Risk Factors are available at <https://www.spglobal.com/spdji/en/custom-indices/robeco-indices-bv/robeco-developed-climate-risk-ls-factor-index-usd-total-return/#overview>

### Regression approach

In the second step, we calculate the climate beta of a stock by regressing its return on the climate risk factor while controlling for broad market movements.

Climate betas are estimated using weighted least squares (WLS) regressions.<sup>4</sup> Using WLS instead of ordinary least squares (OLS) leads to regression estimates that assign greater weight on more recent information.<sup>5</sup> We perform the regression as follows:

$$R_t = \alpha + \beta^M MKT_t + \beta^{CB} CRF_t + \varepsilon_t$$

In the above equation,  $R_t$  represents the return on the stock month  $t$  in excess of the risk-free rate,  $\alpha$  is the risk-adjusted outperformance,  $\beta^M$  is the exposure to the market factor,  $MKT_t$  is the return on the market factor in excess of the risk-free rate,  $\beta^{CB}$  is the climate beta,  $CRF_t$  is the return on the climate risk factor, and  $\varepsilon_t$  is the residual.

To further improve the usefulness of the climate betas, we apply a technique called empirical Bayes shrinkage. This reduces the effects of sampling variation. Specifically, a model that incorporates shrinkage typically performs better in out-of-sample estimation tasks. We apply shrinkage using normal-normal updating with priors defined by

<sup>4</sup>The weighting scheme applied is the exponentially weighted moving average (EWMA). We use a decay parameter  $\lambda$  of 0.97 since it is recommended by RiskMetrics for use with monthly stock returns. The regression is performed with a 60-month (5-year) historical estimation window. We require at least 24 monthly return observations to complete the regression.

<sup>5</sup>Note that the regression can also be conducted using OLS, potentially in combination with a moving regression window, but this will lead to climate beta estimates that adjust more slowly to new information.

GICS industries.<sup>6</sup> In simple terms, this implies that when the estimated climate beta of a stock strongly deviates from the average climate beta in its industry, the coefficient is (slightly) adjusted towards the industry average. The adjustment is performed only to the extent that it corrects for the regression's estimation uncertainty.

### Climate beta in practice

In this section, we provide two case studies on climate beta as used in practice. In the first case study, we provide two examples of how climate beta and emission intensities can convey different information. These anonymized examples are highlighted in Table 1.

The first example considers a large company active in serving the oil & gas industry. Note that this company does not directly produce high emissions, but rather is economically exposed to the oil sector and carbon emissions via its operations. While this company scores in the lowest decile for emission intensity, its climate beta ranks among the top 10% of companies with the highest climate betas.

The second example considers a utility firm that is recognized as an industry leader in renewable energy. While its emissions are relatively high, the climate beta of this firm ranks in the bottom decile of companies with the lowest climate betas, which is much more in line with intuition based on the company's business model (see description).

**Table 1** –Examples of climate beta vs. emissions

Name	Description	Sector (GICS)	Scope 1+2 emissions	Scope 1+2 intensity	Climate beta
Land Ownership Co.	US land ownership corporation that collects royalties from the extraction of oil and gas from its lands.	Financials	31,679 Low 2 <sup>nd</sup> decile	2 Low 3 <sup>rd</sup> decile	0.96 High 10 <sup>th</sup> decile
Renewable Energy Co.	US energy company, offering business solutions for a path towards decarbonization	Utilities	43 million High 10 <sup>th</sup> decile	199 High 10 <sup>th</sup> decile	-0.45 Low 1 <sup>st</sup> decile

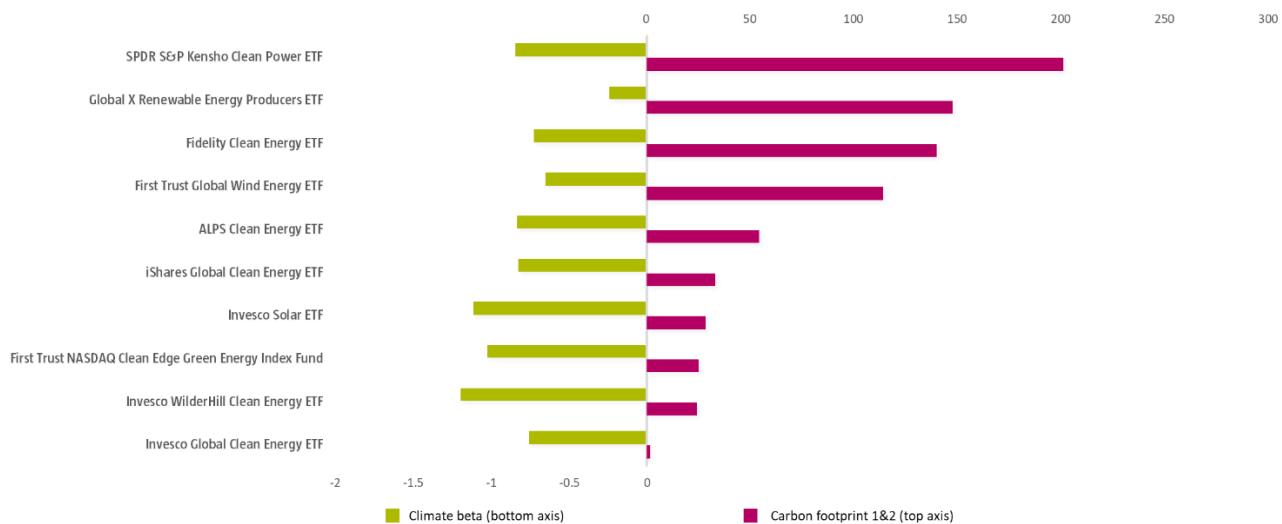
**Source:** Robeco, Trucost. Emissions are reported in metric tonnes of CO<sub>2</sub>-equivalent. The universe used is MSCI World. The analysis is conducted using data as of March 2024.

Our second case study considers the climate beta of a portfolio. This can be estimated in two ways. The first is bottom up, that is, by aggregating the climate betas of the underlying positions that make up the portfolio. Here we highlight the second approach, namely, top down, where climate betas are highlighted for a selection of 10 renewable energy ETFs.

These were estimated directly from the ETFs' returns. The average carbon footprint of the constituents in these ETFs vary, but are high overall. Their climate betas, however, are in all cases significantly negative. Hence, this shows that climate beta provides unique insights into climate transition risk that cannot be derived from generic emissions data. Specifically, the climate betas correctly indicate, in this case, that renewable energy ETFs tend to be less sensitive to climate transition risk and therefore tend to have higher returns when this is high. Focusing on emissions data could therefore potentially lead to sub-optimal decisions regarding these ETFs, or the companies that these ETFs hold, in terms of climate transition risk and the impact climate-related events may have on returns.

<sup>6</sup> In technical terms, the posterior Climate Beta is calculated using the estimated climate beta and the squared standard error of the Climate Beta coefficient. For more information regarding this adjustment, contact Robeco Indices.

Figure 3 – Renewable energy ETFs: Carbon footprint vs. climate beta relative to MSCI World



Source: Robeco, Trucost, FactSet, Morningstar. The analysis is conducted using data as of 18 May 2022.

### Climate beta in the academic literature

Climate beta builds on concepts that have been theorized and thoroughly tested in decades of academic research on asset pricing and expected stock returns. See for example work by Huij, Laurs, Stork, and Zwinkels (2020). Moreover, a similar concept is applied by Görgen, Jacob, Nerlinger, Riordan, Rohleder, and Wilkens (2017)<sup>7</sup>, who study the asset pricing implications of a green-minus-brown factor portfolio and find that an extended factor model that includes such a factor is better able to explain the cross-section of returns.

Engle, Giglio, Kelly, Lee, and Stroebel (2020)<sup>8</sup> use machine learning to construct a hedging strategy that generates high returns when climate news spikes. Huynh and Xia (2020)<sup>9</sup> estimate corporate bond sensitivities to climate change news using a similar approach as the one outlined in this document.

Moreover, climate risk factors provide crucial information in the research by Pástor, Stambaugh, and Taylor (2022),<sup>10</sup> Bolton and Kacperczyk (2021)<sup>11</sup> and Blasberg, Kiesel, and Taschini (2021) who study the additional return generated by brown assets over green assets.<sup>12</sup>

### Climate beta in Robeco Indices

In nearly all of Robeco's Climate, Sustainable and (Multi)-Factor Indices, the climate transition risk is managed by stipulating that the climate beta of our indices must be lower than the (market-cap weighted) benchmark. In certain Climate Indices, e.g. the Robeco Paris-Aligned Climate Leaders Tilt Index, we impose an even more stringent restriction to further lower the climate transition risk profile. Figure 4 shows how such a restriction shifts the index positions away from climate laggards and toward climate leaders. For an overview of Robeco's Climate Index family and other index families, please refer to <https://www.robeco.com/en-int/themes/indices>.

<sup>7</sup> Carbon Risk, available at: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2930897](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2930897)

<sup>8</sup> Hedging Climate Change News, available at: <https://www.jstor.org/stable/48574183>

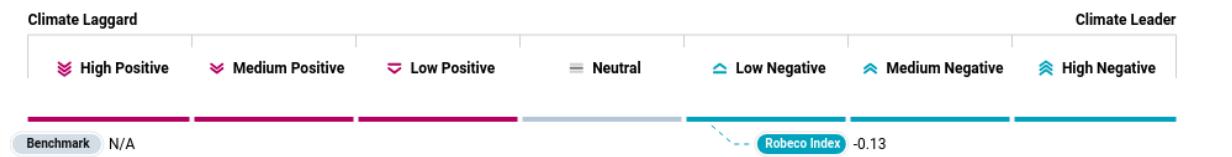
<sup>9</sup> Climate Change News Risk and Corporate Bond Returns, available at: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3577321](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3577321)

<sup>10</sup> Dissecting Green Returns, available at: <https://www.sciencedirect.com/science/article/abs/pii/S0304405X22001672>

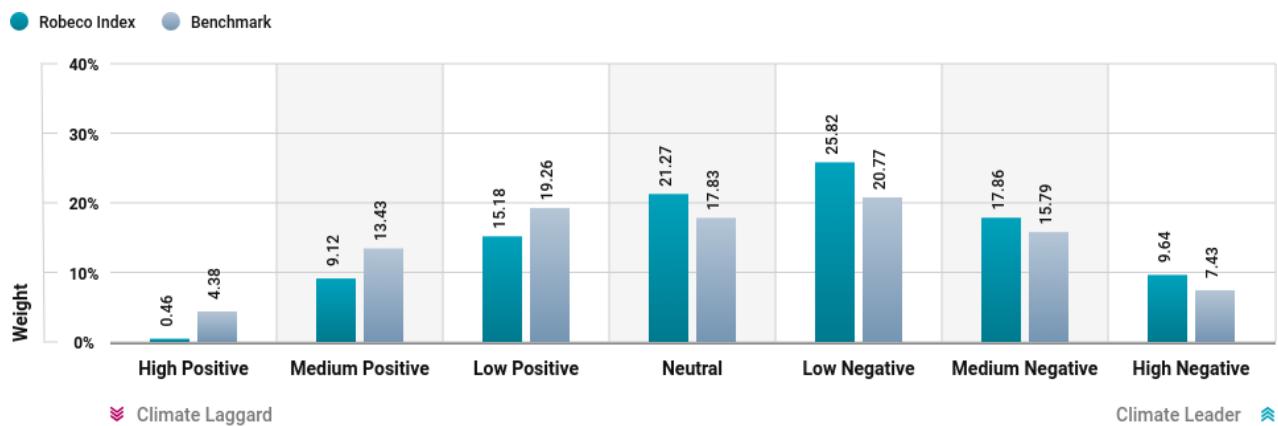
<sup>11</sup> Do Investors Care About Carbon Risk?, available at: <https://www.sciencedirect.com/science/article/abs/pii/S0304405X21001902>

<sup>12</sup> Carbon Default Swap – Disentangling the Exposure to Carbon Risk Through CDS, available at: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3856993](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3856993)

**Figure 4** – Distribution across climate leaders and laggards of Robeco Paris-Aligned Climate Leaders Tilt Index vs. benchmark



## Distribution across climate beta



Source: Robeco. The benchmark is the S&P Developed LargeMidCap ex Korea and Luxembourg Index. The analysis is conducted using data as of November 2024.

## Conclusion

Climate beta provides a forward-looking climate transition risk metric that provides unique insights above and beyond traditional carbon emissions data. By using climate beta, investors can better protect their investments against high climate transition risk and negative climate-related events.

## Important information

Robeco Institutional Asset Management B.V. has a license as manager of Undertakings for Collective Investment in Transferable Securities (UCITS) and Alternative Investment Funds (AIFs) ("Fund(s)") from the Netherlands Authority for the Financial Markets in Amsterdam. This marketing document is intended solely for professional investors, defined as investors qualifying as professional clients, who have requested to be treated as professional clients or are authorized to receive such information under any applicable laws. Robeco Institutional Asset Management B.V. and/or its related, affiliated and subsidiary companies, ("Robeco"), will not be liable for any damages arising out of the use of this document. Users of this information who provide investment services in the European Union have their own responsibility to assess whether they are allowed to receive the information in accordance with MiFID II regulations. To the extent this information qualifies as a reasonable and appropriate minor non-monetary benefit under MiFID II, users that provide investment services in the European Union are responsible for complying with applicable recordkeeping and disclosure requirements. The content of this document is based upon sources of information believed to be reliable and comes without warranties of any kind. Without further explanation this document cannot be considered complete. Any opinions, estimates or forecasts may be changed at any time without prior warning. If in doubt, please seek independent advice. This document is intended to provide the professional investor with general information about Robeco's specific capabilities but has not been prepared by Robeco as investment research and does not constitute an investment recommendation or advice to buy or sell certain securities or investment products or to adopt any investment strategy or legal, accounting or tax advice. All rights relating to the information in this document are and will remain the property of Robeco. This material may not be copied or shared with the public. No part of this document may be reproduced or published in any form or by any means without Robeco's prior written permission. Investment involves risks. Before investing, please note the initial capital is not guaranteed. Investors should ensure they fully understand the risk associated with any Robeco product or service offered in their country of domicile. Investors should also consider their own investment objective and risk tolerance level. Historical returns are provided for illustrative purposes only. The price of units may go down as well as up and past performance is no guarantee of future results. If the currency in which the past performance is displayed differs from the currency of the country in which you reside, then you should be aware that due to exchange rate fluctuations the performance shown may increase or decrease if converted into your local currency. The performance data do not take account of the commissions and costs incurred when trading securities in client portfolios or for the issue and redemption of units. Unless otherwise stated, performances are i) net of fees based on transaction prices and ii) with dividends reinvested. Please refer to the prospectus of the Funds for further details. Performance is quoted net of investment management fees. The ongoing charges mentioned in this document are the ones stated in the Fund's latest annual report at closing date of the last calendar year. This document is not directed to or intended for distribution to or for use by any person or entity who is a citizen or resident of or located in any locality, state, country or other jurisdiction where such distribution, document, availability or use would be contrary to law or regulation or which would subject any Fund or Robeco Institutional Asset Management B.V. to any registration or licensing requirement within such jurisdiction. Any decision to subscribe for interests in a Fund offered in a particular jurisdiction must be made solely on the basis of information contained in the prospectus, which information may be different from the information contained in this document. Prospective applicants for shares should inform themselves as to legal requirements which may also apply and any applicable exchange control regulations and taxes in the countries of their respective citizenship, residence or domicile. The Fund information, if any, contained in this document is qualified in its entirety by reference to the prospectus, and this document should, at all times, be read in conjunction with the prospectus. Detailed information on the Fund and associated risks is contained in the prospectus. The prospectus and the Key Information Document (PRIIP) for the Robeco Funds can all be obtained free of charge from Robeco's websites.

## Additional information for US investors

Robeco is considered "participating affiliate" and some of their employees are "associated persons" of Robeco Institutional Asset Management US Inc. ("RIAM US") as per relevant SEC no-action guidance. Employees identified as associated persons of RIAM US perform activities directly or indirectly related to the investment advisory services provided by RIAM US. In those situations these individuals are deemed to be acting on behalf of RIAM US, a US SEC registered investment adviser. SEC regulations are applicable only to clients, prospects and investors of RIAM US. RIAM US is a wholly owned subsidiary of ORIX Corporation Europe N.V. and offers investment advisory services to institutional clients in the US.

## Additional information for US Offshore investors – Reg S

The Robeco Capital Growth Funds have not been registered under the United States Investment Company Act of 1940, as amended, nor the United States Securities Act of 1933, as amended. None of the shares may be offered or sold, directly or indirectly in the United States or to any US Person. A US Person is defined as (a) any individual who is a citizen or resident of the United States for federal income tax purposes; (b) a corporation, partnership or other entity created or organized under the laws of or existing in the United States; (c) an estate or trust the income of which is subject to United States federal income tax regardless of whether such income is effectively connected with a United States trade or business. In the United States, this material may be distributed only to a person who is a "distributor", or who is not a "US person", as defined by Regulation S under the U.S. Securities Act of 1933 (as amended).

## Additional information for investors with residence or seat in Australia and New Zealand

This document is distributed in Australia by Robeco Hong Kong Limited (ARBN 156 512 659) ("RIAM BV"), which is exempt from the requirement to hold an Australian financial services license under the Corporations Act 2001 (Cth) pursuant to ASIC Class Order 03/1103. Robeco is regulated by the Securities and Futures Commission under the laws of Hong Kong and those laws may differ from Australian laws. This document is distributed only to "wholesale clients" as that term is defined under the Corporations Act 2001 (Cth). This document is not intended for distribution or dissemination, directly or indirectly, to any other class of persons. In New Zealand, this document is only available to wholesale investors within the meaning of clause 3(2) of Schedule 1 of the Financial Markets Conduct Act 2013 (FMCA). This document is not intended for public distribution in Australia and New Zealand.

## Additional information for investors with residence or seat in Austria

This information is solely intended for professional investors or eligible counterparties in the meaning of the Austrian Securities Oversight Act.

## Additional information for investors with residence or seat in Brazil

The Fund may not be offered or sold to the public in Brazil. Accordingly, the Fund has not been nor will be registered with the Brazilian Securities Commission (CVM), nor has it been submitted to the foregoing agency for approval. Documents relating to the Fund, as well as the information contained therein, may not be supplied to the public in Brazil, as the offering of the Fund is not a public offering of securities in Brazil, nor may they be used in connection with any offer for subscription or sale of securities to the public in Brazil.

## Additional information for investors with residence or seat in Brunei

The Prospectus relates to a private collective investment scheme which is not subject to any form of domestic regulations by the Autoriti Monetari Brunei Darussalam ("Authority"). The Prospectus is intended for distribution only to specific classes of investors as specified in section 20 of the Securities Market Order, 2013, and must not, therefore, be delivered to, or relied on by, a retail client. The Authority is not responsible for reviewing or verifying any prospectus or other documents in connection with this collective investment scheme. The Authority has not approved the Prospectus or any other associated documents nor taken any steps to verify the information set out in the Prospectus and has no responsibility for it. The units to which the Prospectus relates may be illiquid or subject to restrictions on their resale. Prospective purchasers of the units offered should conduct their own due diligence on the units.

## Additional information for investors with residence or seat in Canada

No securities commission or similar authority in Canada has reviewed or in any way passed upon this document or the merits of the securities described herein, and any representation to the contrary is an offence. Robeco Institutional Asset Management B.V. relies on the international dealer and international adviser exemption in Quebec and has appointed McCarthy Tétrault LLP as its agent for service in Quebec.

## Additional information for investors with residence or seat in the Republic of Chile

Neither Robeco nor the Funds have been registered with the *Comisión para el Mercado Financiero* pursuant to Law no. 18.045, the *Ley de Mercado de Valores* and regulations thereunder. This document does not constitute an offer of or an invitation to subscribe for or purchase shares of the Funds in the Republic of Chile, other than to the specific person who individually requested this information on their own initiative. This may therefore be treated as a "private offering" within the meaning of Article 4 of the *Ley de Mercado de Valores* (an offer that is not addressed to the public at large or to a certain sector or specific group of the public).

## Additional information for investors with residence or seat in Colombia

This document does not constitute a public offer in the Republic of Colombia. The offer of the fund is addressed to less than one hundred specifically identified investors. The fund may not be promoted or marketed in Colombia or to Colombian residents, unless such promotion and marketing is made in compliance with Decree 2555 of 2010 and other applicable rules and regulations related to the promotion of foreign funds in Colombia. The distribution of this Prospectus and the offering of Shares may be restricted in certain jurisdictions. The information contained in this Prospectus is for general guidance only, and it is the responsibility of any person or persons in possession of this Prospectus and wishing to make application for Shares to inform themselves of, and to observe, all applicable laws and regulations of any relevant jurisdiction. Prospective applicants for Shares should inform themselves of any applicable legal requirements, exchange control regulations and applicable taxes in the countries of their respective citizenship, residence or domicile.

## Additional information for investors with residence or seat in the Dubai International Financial Centre (DIFC), United Arab Emirates

This material is distributed by Robeco Institutional Asset Management B.V. (DIFC Branch) located at Office 209, Level 2, Gate Village Building 7, Dubai International Financial Centre, Dubai, PO Box 482060, UAE. Robeco Institutional Asset Management B.V. (DIFC Branch) is regulated by the Dubai Financial Services Authority ("DFSA") and only deals with Professional Clients or Market Counterparties and does not deal with Retail Clients as defined by the DFSA.

## Additional information for investors with residence or seat in France

Robeco Institutional Asset Management B.V. is at liberty to provide services in France. Robeco France is a subsidiary of Robeco whose business is based on the promotion and distribution of the group's funds to professional investors in France.

## Additional information for investors with residence or seat in Germany

This information is solely intended for professional investors or eligible counterparties in the meaning of the German Securities Trading Act.

## Additional information for investors with residence or seat in Hong Kong

The contents of this document have not been reviewed by the Securities and Futures Commission ("SFC") in Hong Kong. If there is any doubt about any of the contents of this document, independent professional advice should be obtained. This document has been distributed by Robeco Hong Kong Limited ("Robeco"). Robeco is regulated by the SFC in Hong Kong.

## Additional information for investors with residence or seat in Indonesia

The Prospectus does not constitute an offer to sell nor a solicitation to buy securities in Indonesia.

#### **Additional information for investors with residence or seat in Italy**

This document is considered for use solely by qualified investors and private professional clients (as defined in Article 26 (1) (b) and (d) of Consob Regulation No. 16190 dated 29 October 2007). If made available to Distributors and individuals authorized by Distributors to conduct promotion and marketing activity, it may only be used for the purpose for which it was conceived. The data and information contained in this document may not be used for communications with Supervisory Authorities. This document does not include any information to determine, in concrete terms, the investment inclination and, therefore, this document cannot and should not be the basis for making any investment decisions.

#### **Additional information for investors with residence or seat in Japan**

This document is considered for use solely by qualified investors and is distributed by Robeco Japan Company Limited, registered in Japan as a Financial Instruments Business Operator, [registered No. the Director of Kanto Local Financial Bureau (Financial Instruments Business Operator), No.2780, Member of Japan Investment Advisors Association].

#### **Additional information for investors with residence or seat in South Korea**

The Management Company is not making any representation with respect to the eligibility of any recipients of the Prospectus to acquire the Shares therein under the laws of South Korea, including but not limited to the Foreign Exchange Transaction Act and Regulations thereunder. The Shares have not been registered under the Financial Investment Services and Capital Markets Act of Korea, and none of the Shares may be offered, sold or delivered, or offered or sold to any person for re-offering or resale, directly or indirectly, in South Korea or to any resident of South Korea except pursuant to applicable laws and regulations of South Korea.

#### **Additional information for investors with residence or seat in Liechtenstein**

This document is exclusively distributed to Liechtenstein-based, duly licensed financial intermediaries (such as banks, discretionary portfolio managers, insurance companies, fund of funds) which do not intend to invest on their own account into Fund(s) displayed in the document. This material is distributed by Robeco Switzerland Ltd, postal address: Josefstrasse 218, 8005 Zurich, Switzerland. LGT Bank Ltd., Herrengasse 12, FL-9490 Vaduz, Liechtenstein acts as the representative and paying agent in Liechtenstein. The prospectus, the Key Information Documents (PRIIP) the articles of association, the annual and semi-annual reports of the Fund(s) may be obtained from the representative or via the website.

#### **Additional information for investors with residence or seat in Malaysia**

Generally, no offer or sale of the Shares is permitted in Malaysia unless where a Recognition Exemption or the Prospectus Exemption applies: NO ACTION HAS BEEN, OR WILL BE, TAKEN TO COMPLY WITH MALAYSIAN LAWS FOR MAKING AVAILABLE, OFFERING FOR SUBSCRIPTION OR PURCHASE, OR ISSUING ANY INVITATION TO SUBSCRIBE FOR OR PURCHASE OR SALE OF THE SHARES IN MALAYSIA OR TO PERSONS IN MALAYSIA AS THE SHARES ARE NOT INTENDED BY THE ISSUER TO BE MADE AVAILABLE, OR MADE THE SUBJECT OF ANY OFFER OR INVITATION TO SUBSCRIBE OR PURCHASE, IN MALAYSIA. NEITHER THIS DOCUMENT NOR ANY DOCUMENT OR OTHER MATERIAL IN CONNECTION WITH THE SHARES SHOULD BE DISTRIBUTED, CAUSED TO BE DISTRIBUTED OR CIRCULATED IN MALAYSIA. NO PERSON SHOULD MAKE AVAILABLE OR MAKE ANY INVITATION OR OFFER OR INVITATION TO SELL OR PURCHASE THE SHARES IN MALAYSIA UNLESS SUCH PERSON TAKES THE NECESSARY ACTION TO COMPLY WITH MALAYSIAN LAWS.

#### **Additional information for investors with residence or seat in Mexico**

The funds have not been and will not be registered with the National Registry of Securities or maintained by the Mexican National Banking and Securities Commission and, as a result, may not be offered or sold publicly in Mexico. Robeco and any underwriter or purchaser may offer and sell the funds in Mexico on a private placement basis to Institutional and Accredited Investors, pursuant to Article 8 of the Mexican Securities Market Law.

#### **Additional information for investors with residence or seat in Peru**

The Superintendencia del Mercado de Valores (SMV) does not exercise any supervision over this Fund and therefore the management of it. The information the Fund provides to its investors and the other services it provides to them are the sole responsibility of the Administrator. This Prospectus is not for public distribution.

#### **Additional information for investors with residence or seat in Singapore**

This document has not been registered with the Monetary Authority of Singapore ("MAS"). Accordingly, this document may not be circulated or distributed directly or indirectly to persons in Singapore other than (i) to an institutional investor under Section 304 of the SFA, (ii) to a relevant person pursuant to Section 305(1), or any person pursuant to Section 305(2), and in accordance with the conditions specified in Section 305, of the SFA, or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA. The contents of this document have not been reviewed by the MAS. Any decision to participate in the Fund should be made only after reviewing the sections regarding investment considerations, conflicts of interest, risk factors and the relevant Singapore selling restrictions (as described in the section entitled "Important information for Singapore Investors") contained in the prospectus. Investors should consult their professional adviser if you are in doubt about the stringent restrictions applicable to the use of this document, regulatory status of the Fund, applicable regulatory protection, associated risks and suitability of the Fund to your objectives. Investors should note that only the Sub-Funds listed in the appendix to the section entitled "Important information for Singapore Investors" of the prospectus ("Sub-Funds") are available to Singapore investors. The Sub-Funds are notified as restricted foreign schemes under the Securities and Futures Act, Chapter 289 of Singapore ("SFA") and invoke the exemptions from compliance with prospectus registration requirements pursuant to the exemptions under Section 304 and Section 305 of the SFA. The Sub-Funds are not authorized or recognized by the MAS and shares in the Sub-Funds are not allowed to be offered to the retail public in Singapore. The prospectus of the Fund is not a prospectus as defined in the SFA. Accordingly, statutory liability under the SFA in relation to the content of prospectuses does not apply. The Sub-Funds may only be promoted exclusively to persons who are sufficiently experienced and sophisticated to understand the risks involved in investing in such schemes, and who satisfy certain other criteria provided under Section 304, Section 305 or any other applicable provision of the SFA and the subsidiary legislation enacted thereunder. You should consider carefully whether the investment is suitable for you. Robeco Singapore Private Limited holds a capital markets services license for fund management issued by the MAS and is subject to certain clientele restrictions under such license.

#### **Additional information for investors with residence or seat in Spain**

Robeco Institutional Asset Management B.V., Sucursal en Espana with identification number W0032687F and having its registered office in Madrid at Calle Serrano 47-14º, is registered with the Spanish Commercial Registry in Madrid, in volume 19.957, page 190, section 8, sheet M-351927 and with the National Securities Market Commission (CNMV) in the Official Register of branches of European investment services companies, under number 24. The investment funds or SICAV mentioned in this document are regulated by the corresponding authorities of their country of origin and are registered in the Special Registry of the CNMV of Foreign Collective Investment Institutions marketed in Spain.

#### **Additional information for investors with residence or seat in South Africa**

Robeco Institutional Asset Management B.V. is registered and regulated by the Financial Sector Conduct Authority in South Africa.

#### **Additional information for investors with residence or seat in Switzerland**

The Fund(s) are domiciled in Luxembourg. This document is exclusively distributed in Switzerland to qualified investors as defined in the Swiss Collective Investment Schemes Act (CISA). This material is distributed by Robeco Switzerland Ltd, postal address: Josefstrasse 218, 8005 Zurich. ACOLIN Fund Services AG, postal address: Leutschenbachstrasse 50, 8050 Zürich, acts as the Swiss representative of the Fund(s). UBS Switzerland AG, Bahnhofstrasse 45, 8001 Zurich, postal address: Europastrasse 2, P.O. Box, CH-8152 Opfikon, acts as the Swiss paying agent. The prospectus, the Key Information Documents (PRIIP), the articles of association, the annual and semi-annual reports of the Fund(s), as well as the list of the purchases and sales which the Fund(s) has undertaken during the financial year, may be obtained, on simple request and free of charge, at the office of the Swiss representative ACOLIN Fund Services AG. The prospectuses are also available via the website.

#### **Additional information relating to RobecoSAM-branded funds/services**

Robeco Switzerland Ltd, postal address Josefstrasse 218, 8005 Zurich, Switzerland has a license as asset manager of collective assets from the Swiss Financial Market Supervisory Authority FINMA. The RobecoSAM brand is a registered trademark of Robeco Holding B.V. The brand RobecoSAM is used to market services and products which entail Robeco's expertise on Sustainable Investing (SI). The brand RobecoSAM is not to be considered as a separate legal entity.

#### **Additional information for investors with residence or seat in Taiwan**

The contents of this document have not been reviewed by any regulatory authority in Hong Kong. If you are in any doubt about any of the contents of this document, you should obtain independent professional advice. This document has been distributed by Robeco Hong Kong Limited ("Robeco"). Robeco is regulated by the Securities and Futures Commission in Hong Kong.

#### **Additional information for investors with residence or seat in Thailand**

The Prospectus has not been approved by the Securities and Exchange Commission which takes no responsibility for its contents. No offer to the public to purchase the Shares will be made in Thailand and the Prospectus is intended to be read by the addressee only and must not be passed to, issued to, or shown to the public generally.

#### **Additional information for investors with residence or seat in the United Arab Emirates**

Some Funds referred to in this marketing material have been registered with the UAE Securities and Commodities Authority ("the Authority"). Details of all Registered Funds can be found on the Authority's website. The Authority assumes no liability for the accuracy of the information set out in this material/document, nor for the failure of any persons engaged in the investment Fund in performing their duties and responsibilities.

#### **Additional information for investors with residence or seat in the United Kingdom**

Robeco is deemed authorized and regulated by the Financial Conduct Authority.

#### **Additional information for investors with residence or seat in Uruguay**

The sale of the Fund qualifies as a private placement pursuant to section 2 of Uruguayan law 18,627. The Fund must not be offered or sold to the public in Uruguay, except under circumstances which do not constitute a public offering or distribution under Uruguayan laws and regulations. The Fund is not and will not be registered with the Financial Services Superintendency of the Central Bank of Uruguay. The Fund corresponds to investment funds that are not investment funds regulated by Uruguayan law 16,774 dated 27 September 1996, as amended.